

AMORPHA CONFUSA, A NEW NAME FOR
AN OLD AMORPHA (FABACEAE: AMORPHEAE)

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ABSTRACT

A new combination, **Amorpha confusa** (Fabaceae: Amorpheae), based on *A. georgiana* var. *confusa*, is established. The variety is raised in rank due to differences in morphology, distribution, habitat preference, phenology, ploidy, and genetic variation when compared to *A. georgiana*.

RESUMEN

Se establece una combinación nueva, **Amorpha confusa** (Fabaceae: Amorpheae), basada en *A. georgiana* var. *confusa*. La variedad se promueve al rango de especie debido a las diferencias en morfología, distribución, preferencia de hábitat, fenología, ploidía, y variación genética en comparación con *A. georgiana*.

For many years, plants currently known as *Amorpha georgiana* Wilbur var. *confusa* Wilbur (Fabaceae Juss.: Amorpheae Boriss.) have been a source of taxonomic and nomenclatural confusion. Wilbur (1964) elegantly explored the intricacies of the situation in his revision of the dwarf species of *Amorpha* L. Various names often had been applied incorrectly to this species (e.g., *A. caroliniana* H. B. Croom, *A. cyanostachya* M.A. Curtis) or were unavailable (e.g., *A. glabra* Desf. ex Beadle, nom. illeg.). This left Wilbur no option but recognize it with a new name, which he did at the rank of variety due to its similarity to *A. georgiana*. At the time, this was the most conservative course of action due to the paucity of collections of both var. *georgiana* and var. *confusa*, even though Wilbur recognized that the two differed morphologically. Later, Wilbur (1975 p. 367) commented in his monograph of the genus that he remained “skeptical” that his treatment would prove “satisfactory when more is learned about them” and acknowledged that “future investigation may well demonstrate that the two taxa are specifically distinct.” Most recent floristic treatments and species checklists (e.g., Isely 1990, 1998; Kartesz 1999) have followed Wilbur’s treatments in recognizing two varieties. These varieties differ morphologically in many characters with var. *confusa* having larger leaflets [(10–)15–25(–35) mm long and (7–)9–15(–18) mm wide versus (3–)6–10(–15) mm long and (2–)3–5(–8) mm wide], longer petioles [(6–)8–15(–20) mm versus 1–3(–5) mm] and racemes [10–20(–30) cm versus (2–)3–5(–6) cm], less numerous leaflets, clustered, panicle-like inflorescences rather than generally solitary racemes, and bright blue rather than reddish-violet vexilla (Fig. 1; Wilbur 1964; Sorrie 1995; Weakley 1995).

Recent investigations into the current distribution, conservation status, and genetics of the two varieties have revealed additional differences and supported Wilbur’s (1975) notion that they should each be recognized at the specific level. The distributions of the varieties do not overlap currently, nor did they historically based on herbarium records (Fig. 2). *Amorpha georgiana* var. *confusa* is an endemic of a few counties in



FIG. 1. a. *Amorpha confusa* at Green Swamp Preserve, North Carolina. (Photograph by Andrew Walker). b. *Amorpha georgiana* at Fort Bragg, North Carolina (Photograph by Bruce Sorrie).

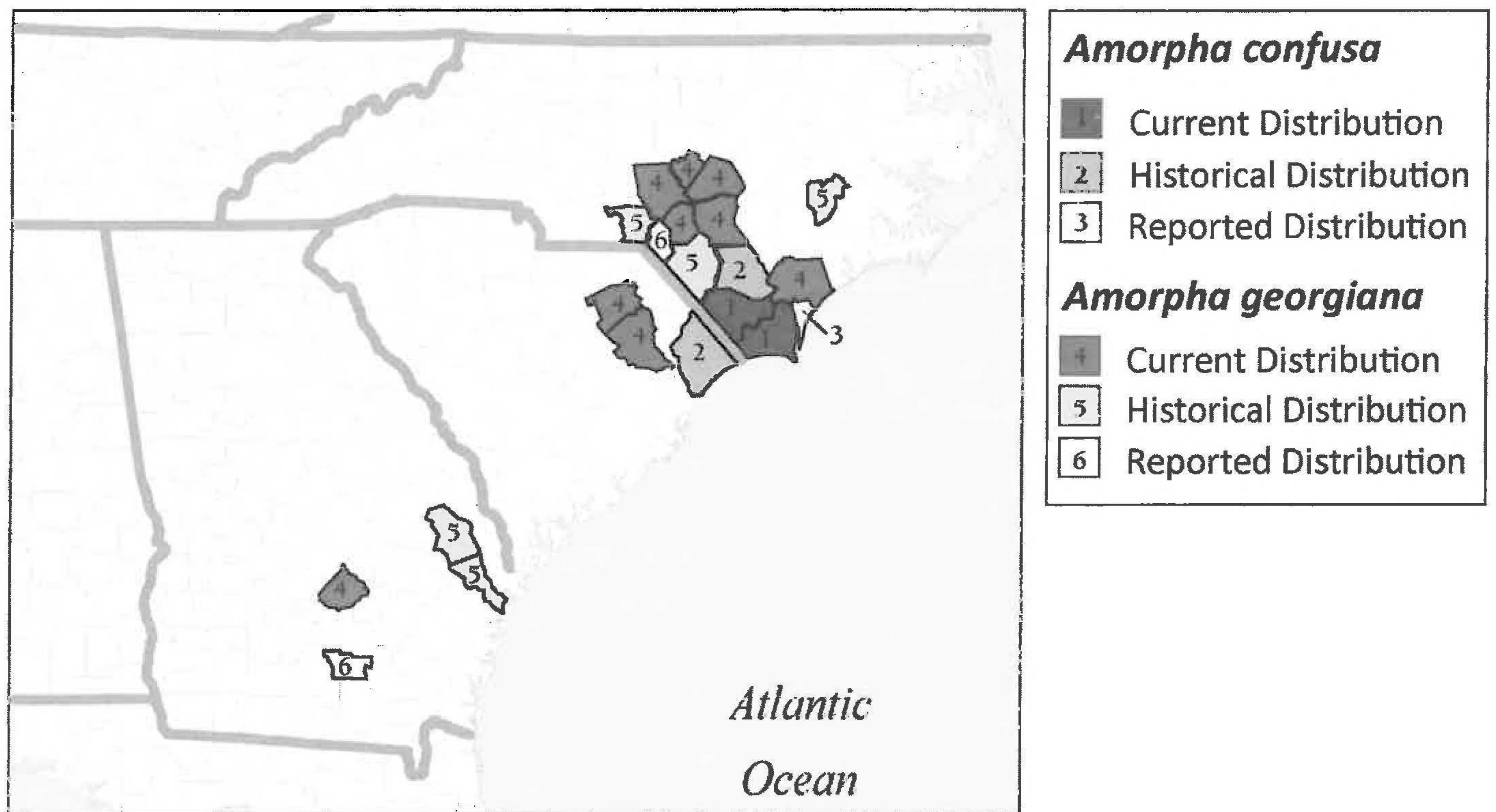


Fig. 2. Current, historical, and reported distributions by county of *Amorpha confusa* and *Amorpha georgiana* in the southeastern United States.

extreme southeastern North Carolina and immediately adjacent South Carolina, though it is now believed to be extant in only Brunswick and Columbus counties of North Carolina (Weakley 1995). *Amorpha georgiana* var. *georgiana* is found in the middle and inner Coastal Plain of North Carolina, South Carolina and Georgia (Sorrie 1995). Both varieties are associated with the longleaf pine savanna ecosystem but differ in the details of their habitat preferences with var. *confusa* occurring in flat, moist to rather dry outer Coastal Plain savannas with loamy soils, especially of the Foreston series (Weakley 1995); whereas var. *georgiana* occupies more moist to occasionally inundated areas, chiefly sandy river terraces and river banks above blackwater rivers traversing the sandhills of the middle and inner Coastal Plain, and more infrequently the edges of swampy floodplains (Sorrie 1995). Both varieties have suffered habitat loss, fragmentation, and degradation in recent years due to human activities, including fire suppression, agriculture, and land development, causing them to be of conservation concern (Sorrie 1995; Weakley 1995). In North Carolina, var. *confusa* is currently considered to be threatened (North Carolina Department of Agriculture & Consumer Services 2008) because its population numbers are estimated to be less than 14,000 individuals, and only those populations occurring in The Nature Conservancy’s Green Swamp Preserve are likely to receive long-term conservation-oriented management (Weakley 1995).

The two varieties also differ in phenology, with *Amorpha georgiana* var. *confusa* flowering from late May to mid-July and var. *georgiana* flowering from late April to late May (Sorrie 1995). Additionally, recent genetic work has indicated that the genome of var. *confusa* is likely tetraploid, while that of var. *georgiana* is diploid (Straub et al. 2009). A comparison of the microsatellite variation observed for the varieties at the population level indicates that they are quite well differentiated genetically and preliminary phylogenetic analyses of chloroplast spacer region and low-copy nuclear gene DNA sequence data indicate that they are likely not each other’s closest relative among *Amorpha* species (S. Straub & J. Doyle, unpublished data).

Since the time of Wilbur’s (1964) original publications, additional studies of the morphology, distributions, habitat preferences, phenology, and genetics of the two varieties have shown the extent to which they are distinct from one another. These differences warrant the recognition of var. *confusa* at the rank of species (Sorrie 1995; Weakley 1995). Recognition at this rank further emphasizes the conservation importance and need of both of these imperiled species.

Amorpha confusa (Wilbur) S.C.K. Straub, Sorrie & Weakley, comb. et stat. nov. *Amorpha georgiana* var. *confusa* Wilbur, J. Elisha Mitchell Sci. Soc. 80: 58. 1964. TYPE: UNITED STATES. NORTH CAROLINA. Brunswick Co.: Savannah, 7 mi SW of Wilmington, 31 May 1938, R.K. Godfrey & I.V. Shunk 4122 (LECTOTYPE, designated by Wilbur 1975: GH, digital image!; DUPLICATE OF THE LECTOTYPE: US, digital image!).

Amorpha glabra sensu Beadle, Bot. Gaz. 25:279. 1898; FE. Boynton in Small's Fl. S.E. U.S. 626. 1903, non Poir., Encycl. (Lamarck) Suppl. 1:330. 1810.

Amorpha caroliniana sensu Torr. & A. Gray, Fl. N. Amer. 1:305. 1838 in part; C.K. Schneider, Ill. Handb. Laubholz. 2:74. Mar 1907 & Bot. Gaz. 43:302. Jun 1907; Rydberg, Fl. N. Amer. 24:29. 1919, non H.B. Croom, Amer. J. Sci. Arts 25:74. 1834.

Amorpha cyanostachya sensu E.J. Palmer, J. Arnold Arbor. 12:169. 1931; Small, Man. S.E. Fl. 639. 1933, non M.A. Curtis, Boston J. Nat. Hist. 1:140. 1835.

Wilbur (1964) did not choose among the two syntypes listed in the protologue as the holotype, although he later indicated that he considered the specimen at GH to be the holotype (Wilbur 1975: 366), here corrected to lectotype pursuant to Article 9.8. of the ICBN (McNeill et al. 2006).

Additional collections. **NORTH CAROLINA. Bladen Co.:** pinewoods, *Biltmore Herbarium 5767B* (NY). **Brunswick Co.:** pineland near Wilmington, 28 Aug 1938, R.K. Godfrey 6233 (GH, US, NCSC-4939); oak woods along route 17 about 3.5 mi NE of Bolivia, 22 Jun 1947, C.E. Wood, Jr. & I.D. Clement 7054 (GH, NCU-175175); dry sandy pineland, 20 mi S of Wilmington on route 17, 27 Jun 1950, F.H. Sargent 10008 (GH); scrub oak sand ridge between Shallotte and Ash, 6 Jul 1951, R.K. Godfrey & H.L. Blomquist 51177 (FLAS, NCSC); dry, sandy soil, savanna, 2.4 mi W of Shallotte, Highway 130, 10 Jul 1951, H.L. Blomquist, R.K. Godfrey & R.L. Wilbur 15225 (DUKE); infrequent in weedy ditch about 1 mi W of Shallotte on NC 130; 6 Jun 1957, R.L. Wilbur 5991 (DUKE-141703); infrequent on sandy disturbed roadside about 6 mi NW of Southport on Route 87, 12 Jun 1957; R.L. Wilbur 6169 (DUKE-141699); pine flatwoods about 4 mi from Southport on route 87-133, 10 Jul 1963, R.L. Wilbur 6954 (DUKE, FSU); open piney woods about 11 mi NW of Supply on Route 211, 18 Aug 1967, R.L. Wilbur 9466 (DUKE-186242); powerline right-of-way, junction of state roads 1518 and 1521, N of Funston, 14 Jun 1979, D.J. Sieren 1835 (NCU-551161, WILM-14283); pine/wiregrass savanna 0.8 km SE of borrow pit on east side of NC 211, 9.4 km N of US 17, 18 Jul 1986, J.B. Taggart 224 (NCU-557630); Green Swamp Preserve, 5.5 mi N of Supply, 22 May 2003, A.S. Weakley & G.T. Chandler 7242 (NCU-569103, NCU-569104, NCU-569106); Green Swamp Preserve, W of Big Island Savanna, 22 May 2003, A.S. Weakley & G.T. Chandler 7244 (NCU-569107, NCU-569109, NCU-569111); Boiling Springs Lake Preserve, Camp Pretty Pond Quad, 11 Aug 2006, J.C. Morris 081106-11 (NCU-584945, WILM). **Columbus Co.:** low woods, Nakina, 25 Jun 1935, P.O. Shallert s.n. (GH), railroad savannah near Route 76, 1 mi SE of Delco, 31 Jul 1949, W.B. Fox & R.K. Godfrey 2874 (NCSC-34075); savanna 3.7 mi NW of Old Dock on NC 130, 2 Jul 1968, S.W. Leonard & K. Moore 1720 (FLAS, FSU, GH, NCU-319790); sandy damp soil along CR 1928 to Shulkins, 7 Jul 1989, J.A. Churchill 89-685 (VDB). **New Hanover Co.:** Wilmington, 1 Jul 1904, *Biltmore Herbarium 1391-L* (NCU); Wilmington, 6 Oct 1908, E.A. Bartram s.n. (PH); Wilmington, 11 Jun 1917, T.G. Harbison 3415 (NCU-3469); low swampy ground, Wilmington, 11 Jun 1917, T.G. Harbison 16 (A). **SOUTH CAROLINA. Horry Co.:** 9 mi S of Green Sea, 16 Jun 1941, H.R. Totten s.n. (NCU-22550, NCU-577773).

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